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A Study On Knowledge, Attitude And Practice Of Drug Dispensers Functioning At Community Pharmacies In South-Bengaluru

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ABSTRACT

Background: Pharmacists often dispense medications upon patient request without prescriptions, leading to issues such as antibiotic resistance and non-compliance with Good Pharmacy Practice (GPP) guidelines. Effective regulation of prescription and over-the-counter (OTC) medications is crucial to prevent adverse drug reactions and interactions.

Objective: The objectives of this research are to determine the knowledge, attitude and practice (KAP) of OTC and non-OTC drugs among Dispensers in the pharmacies located in Bangalore, Karnataka.

Methodology: Conducted among 500 dispensers using a standard KAP questionnaire, the study assessed demographics, knowledge, attitude, and practice. Data were analysed with SPSS software, applying ANOVA for statistical evaluation. Both male and female dispensers working in community pharmacies were included.

Results: The study of 500 participants revealed notable gaps in knowledge and practice, with 80.2% having a medical sciences background. Knowledge varied, with 6.8% unfamiliar with medical abbreviations and 84.8% knowledgeable about Schedule H and H1. Practices showed 91% dispensing analgesics without prescriptions. Pharmacy-background participants had higher scores, and more experience correlated with better performance. Continuous education is essential to address these gaps.

Conclusion: The study reveals that GPP guidelines are frequently not followed and emphasizes the need for improved training and supervision of pharmacists. Enhanced enforcement of standards and continuous education are crucial for better drug dispensing practices and rational drug use.

Keywords: Community pharmacies, OTC, Non-OTC, Knowledge, Attitude, Practice.

Introduction

In India, patients have the freedom to purchase both over-the-counter (OTC) and prescription-only medications on their own, although dispensing prescription drugs without a valid prescription is against the law. However, in numerous less developed countries, a substantial portion of medications can be obtained without a prescription, despite existing legislation[1].

It has been noted that many pharmacists dispense medications primarily based on patient requests, often bypassing the need for a prescription. In some cases, they even provide medications without requiring a prescription. This practice is driven by the pharmacist's extensive experience, knowledge, and qualifications[2].

Non-prescription or "over-the-counter" (OTC) medications are those that can be purchased from a pharmacy without a prescription. Over-the-counter (OTC) drug use has been reported to be increasing globally, with India currently holding the 11th position in the worldwide OTC market[3]. The Drug and Cosmetic Rules of 1945 have two schedules: Schedule H and Schedule X, which include prescription medications. Schedule H and Schedule X medications should only be distributed with a licensed physician's prescription. This legal requirement was created to stop people from taking medicines on their own[4].

Effective dispensing practice ensure that the correct patient receives the appropriate medication in an efficient format, with the correct dosage and amount, accompanied by clear instructions, and packaged in a way that maintains the medication's effectiveness.

Hence, this study is conducted to assess Knowledge, Attitude and Practice of drug dispensers towards both OTC and non-OTC drugs as well as to assess to what extent drug dispensing practices in community pharmacies of South Bengaluru align with the standards outlined in Good Pharmacy Practice (GPP) guidelines.

This study was carried out to raise awareness about substantial knowledge of drug schedules, safe dispensing of OTC & non-OTC medications, pregnancy safe medications, LASA drugs, importance of providing patient counselling on disease-related, management of minor ailments, medication usage, precautions, medication interactions & potential side effects, implication of functioning drug information centre services, including more pharmacy based clinical services such as BP & BGL monitoring, training patients on use of medical devices, vaccine administration, medication therapy management. Most importantly to encourage community pharmacy practitioners to participate in continuing education programs in order for

them to develop competence and keep up with the advances in their field of expertise. This commitment to staying current is integral to their ability to provide optimal care to patients.
This study aims to provide valuable insights into the current drug dispensing procedures prevalent in society, identifying opportunities for enhancement. It seeks to offer constructive suggestions to promote safe and informed drug usage, avoid unsafe self-medication practices. The study aspires to depict pharmacists as responsible Indian citizens who conscientiously fulfil their obligations, understand their rights, and refrain from frequent misuse.

Objectives
Primary:
- To assess the knowledge, attitude and practice of drug dispensers working in community pharmacies.

Secondary:
- To ascertain the prevalence of OTC and non-OTC drugs.
- To ascertain if pharmacists are engaging counselling activities.
- To embolden pharmacists to participate in continuing education programmes in order for them to develop competence and keep up with advances in their field of expertise.

Ethics approval:
Ethical approval was granted by Sagar Hospitals, Tilak Nagar on 17 April 2023.

Methodology
Study design and setting:
Survey based community study was conducted at community pharmacies in South Bengaluru.

Sample and sample size:
Not less than 396 subjects, with precision of 5%.
Following approval from the institutional ethics committee, a questionnaire-based survey study was conducted in South Bengaluru from April 2023 to September 2023, involving 500 participants.

Inclusion criteria:
All the community pharmacy practitioners willing to participate.

Exclusion criteria:
Community pharmacy practitioners who denied to participate.
All non-community pharmacy practitioners.

Development of data collection form & process of data collection:
The questionnaire was designed in accordance with GPP guidelines, comprising 28 questions categorized into Sociodemographic (4), Knowledge (5) and Attitude/Practice (19) sections and validated through face value and expert opinions. Underwent pretesting on ten participants & yielded Cronbach's alpha scores of 0.80 for relevance, 0.83 for clarity, 0.82 for simplicity and 0.73 for ambiguity respectively. The questionnaire demonstrated robust internal consistency.
The leaflet was created following a standard format and validated through process of face validation, content validation and readability scoring by field experts. The content validation scored 1.14 and the SMOG readability score was 12.16, ensuring its effectiveness.
Survey forms were distributed across diverse community pharmacies in all areas of South Bengaluru, accompanied by an attached informed consent form explaining the study objectives and assuring confidentiality to promote impartial responses, with consent provided. Filled survey forms were received and subsequently, participants were provided with a pre-designed and validated informative leaflet to update their knowledge. This comprehensive approach, involving ethical considerations, rigorous questionnaire construction and validation processes,
underscores the methodological robustness of the study conducted in the specified timeframe and location.

Statistical Analysis:
Statistical software: Microsoft excel was used to compile the data and SPSS version 20 was used to analyse the data.
To describe the data frequency and percentage table were used.
Simple bar graph was used to present result.
Chi-square test was used to differentiate attitude and practice of drug dispensing among pharmacy & non-pharmacy background participants.
Analysis of variance test (ANOVA-test) was used to give Knowledge, Attitude and Practice score.

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All the tests are applied by assuming 5% significance level and with 80% power of the test.

Results

Demographic data

A total of 500 participants were enrolled in the study and required data were collected from the participants. Out of which 336 (67.2%) participants were male and 164 (32.8%) participants were female.

Age-wise, the breakdown was as follows: 60 participants (12.0%) were aged 18-20 years, 236 (47.2%) were between 21-29 years, 126 (25.2%) were 31-39 years old, and 78 (15.6%) were 40 years or older.

The educational backgrounds of participants varied. A majority, 401 (80.2%), had a background in medical sciences. In contrast, 18 participants (3.6%) were from non-medical sciences, 28 (5.6%) had a commerce background, 14 (2.8%) had studied arts, 29 (5.8%) had completed higher secondary education, and 10 (2.0%) had secondary school education.

In terms of work experience, 242 participants (48.4%) had between 0 and 5 years of experience, and 138 (27.6%) had 6 to 10 years. Only a small number had more than 10 years of experience, reflecting a largely younger and less experienced participant group.

Table 1 Demographics of the study population

Demographic category	**No of respondents (%)**
Gender	
Male	67.2
Female	32.8
Age [years]	
18-20	12.0
21-29	47.2
31-39	25.2
≥ 40	15.6
Qualification	
Medical science [Pharmacy, BSc, MSc, Paramedical]	80.2
Non-medical science [BE, BCA, Diploma]	3.6
Commerce	5.6
Arts [MA, BA]	2.8
HSC [Higher Secondary Certificate]	5.8
SSC [Secondary School Certificate]	2.0
Experience [years]	
0-5	48.4
6-10	27.6
>10	24.0

Knowledge data

Among the 500 participants, 34 (6.8%) were completely unfamiliar with medical abbreviations. In comparison, 295 participants (59%) knew less than 50% of the abbreviations, 171 (34.2%) were knowledgeable about more than 50% of the abbreviations. This shows that a small portion (6.8%) of participants lacked knowledge of medical abbreviations entirely.

Regarding the Schedule H and H1 of the Drugs and Cosmetics Act (D & C Act), 76 participants (15.2%) were not informed about these schedules, while 424 (84.8%) were knowledgeable. This indicates that most participants had a strong understanding of these regulations.

Similarly, 57 participants (11.4%) were not familiar with Schedule X of the D & C Act, whereas 443 (88.6%) had knowledge of it, reflecting a high level of awareness about this schedule.

On the topic of drugs to avoid during pregnancy, 101 participants (20.2%) lacked knowledge about the relevant categories, while 399 (79.8%) were well-informed.

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Table 2 Knowledge of participants

Knowledge Category	No of respondents (%)
How well versed are you with medical abbreviations?	
Not aware of the any abbreviations	6.8
Aware of < 50% of the abbreviations	59
Aware of > 50% of the abbreviations	34.2
Are you aware of the schedule H and H1 of D & C act?	
No	15.2
Yes	84.8
Are you aware of the schedule X drugs?	
No	11.4
Yes	88.6
Do you know about the categories of drugs to be avoided during pregnancy?	
No	20.2
Yes	79.8
Do you pay attention to look alike sound alike (LASA) drugs?	
No	55.8
Yes	44.2

Finally, knowledge about look-alike sound-alike (LASA) drugs was limited; 279 participants (55.8%) were not knowledgeable about LASA drugs, and only 221 (44.2%) had a better understanding, highlighting a significant gap in awareness in this area

Attitude and practice data

Among the 500 participants, analgesics were the most frequently dispensed medication without a prescription, with approximately 455 participants (91%) providing them. Antibiotics were the second most commonly dispensed, with 365 participants (73%) doing so without a prescription. Antiallergics followed, dispensed by 299 participants (59.8%), while antihypertensives and antidiabetics were dispensed by 167 (33.4%) and 165 participants (33%), respectively. Additionally, other classes of medications were dispensed by 141 participants (28.2%). This pattern indicates a lack of adherence to good pharmacy practices regarding prescription-only medications.

Regarding prescription practices, 474 participants (94.8%) dispensed medications only with a prescription on a letterhead, demonstrating good adherence to this standard. However, 26 participants (5.2%) did not follow this practice, reflecting a gap in compliance with proper dispensing procedures.

When it comes to patient care, only 46.3% of participants checked for comorbidities and past medication use before dispensing, while 53.7% did not, highlighting a significant area for improvement in patient evaluation prior to dispensing medications.

Personal recommendations of medications were made by 226 participants (45.2%), while 274 (54.8%) did not make personal recommendations, indicating variability in providing tailored advice to customers.

Advising the public on managing minor ailments was a positive aspect, with 434 participants providing such guidance. However, it is crucial that such advice remains within the providers' expertise and is given responsibly.

Alternative brands were recommended by 452 participants (90.4%) when the prescribed brand was unavailable, whereas 48 participants (9.6%) did not provide alternatives, reflecting a generally good practice in ensuring medication availability.

Patient counselling during drug dispensing was performed by 60.2% of participants, while 39.8% did not engage in this practice, pointing to a need for improved patient interaction and counselling.

Regarding intravenous (IV) fluids and injections, 489 participants (97.8%) refrained from dispensing these without a prescription, showcasing strong adherence to proper dispensing protocols. Conversely, 11 participants (2.2%) did dispense IV fluids or injections without a prescription.

Monitoring for medication interactions was conducted by 36.85% of participants, while 63.15% did not, indicating a significant deficiency in monitoring drug interactions, which needs to be addressed.

None of the participants dispensed narcotics without valid prescriptions, reflecting excellent awareness of medication dispensing regulations.

All participants were found to maintain records of medications supplied according to Schedule X, demonstrating good pharmacy practice.

However, 425 participants (85%) lacked a drug information centre at their pharmacy, while only 75 participants (15%) had one. This suggests a substantial gap in access to drug information resources, which is crucial for effective pharmacy practice.
Among the 500 participants, 93.15% did not report adverse drug reactions (ADRs), while only 6.85% actively reported them. Encouraging ADR reporting and providing proper training for dispensers is crucial for enhancing patient safety and improving pharmacy practices.
Additionally, only 32.65% were engaged in continuous training and education programs, while 67.35% were not participating in such programs. This highlights a need to encourage more widespread participation in ongoing professional development to update knowledge and improve patient care.
Furthermore, it was observed that 372 participants (74.4%) did not offer health screening services, whereas 128 participants (25.6%) provided these services to the public. For those providing health screenings, it is important to ensure proper training and adherence to regulatory guidelines to maintain high standards of service.

Table 3 Attitude & practice of participants

Attitude & Practice	**Percentage (%)**
Do you Dispense medications without prescription (category of drugs)	
Analgesics	91
Antidiabetics	33
Antibiotics	73
Antihypertensives	33.4
Antiallergics	59.8
Others	28.2
Do you dispense medications without requiring letterhead, on a prescription?	
No	94.8
Yes	5.2
Do you verify the patients comorbidities and past medication use prior to dispensing?	53.7
No	46.3
Yes	
Do you personally recommend any medications to the customer?	
No	54.8
Yes	45.2
Do you advise the public on the management of minor ailments?	
No	13.2
Yes	86.8
Do you dispense alternative brands if prescribed brand is not available?	
No	90.4
Yes	9.6
Do you counsel the patient or customer while dispensing?	
No	39.8
Yes	60.2
Have you ever dispensed injections or IV fluids without prescription?	
No	97.8
Yes	2.2
Do you monitor for medication interactions during dispensing?	
No	63.15
Yes	36.85
Do you dispense narcotics without prescription or with older prescription?	
No	100
Yes	0
Do you strictly maintain a record of medications supplied in accordance with Schedule X?	
No	0
Yes	100
Does your pharmacy have a functioning drug information centre?	
No	85

Yes	15
Have you filed any ADR reports?	
No	93.15
Yes	6.85
Do you take part in education and training programme?	
No	67.35
Yes	32.65
Are you facilitating any health screening services?	
No	74.4
Yes	25.6

Educational qualification wise distribution of knowledge, attitude and practice score

The mean knowledge score for participants were as follows based on educational background. pharmacy background was 18.6(3.32%), medical science background was 6.47(2.09%), nonmedical science background was 6.33(5.29%), commerce background was 4.14(4.33%), arts background was 4.07(0.76%), whereas participants with HSC and SSC background was 1.89(1.44%) and 1.0(0.67%) respectively.

The mean attitude and practice score for participants with pharmacy background was 55.57. The average mean attitude and practice score for participants with medical science background were 27.66, for participants with non-medical science background was 27.65, for participants with commerce background it was 41.28, for participants with arts background it was 15.46, for participants with HSC and SSC background it was 8.86 and 7.8 respectively.

Working experience wise distribution of knowledge, attitude and practice score

The participants with experience more than 10 years were having the highest mean knowledge score (3.7). Participants with 0-5 years of working experience were having the least mean knowledge score (2.77). It indicates that higher year of experience correspond to higher level of knowledge.

Similarly, participants with experience of more than 10 years were having highest mean attitude and practice score (10.26) while participants with 0-5 years of working experience were having least attitude and practice score (10.05).

Discussion

Assessment for Sociodemographic of participants

In this research, a validated questionnaire was completed by all 500 participants, achieving a 100% response rate. Of these, 336 were male and 164 were female. Age distribution included 60 participants aged 18-20 years, 236 aged 21-29 years, 126 aged 31-39 years, and 78 aged 40 years or older. Among those with a pharmacy background, there were 401 participants, while 18 had non-pharmacy backgrounds, 28 had commerce backgrounds, 14 had arts backgrounds, 29 had an HSC, and 10 had an SSC. Most respondents had 0-5 years of work experience, totalling 242, with 120 having more than 10 years of experience.

Assessment of Knowledge of community pharmacy practitioners

Out of 500 participants, 34 (6.8%) had no knowledge of medical abbreviations, while 295 (59%) knew fewer than 50%, and 171 (34.2%) were familiar with over 50% of abbreviations. This highlights that a small percentage (6.8%) were entirely unaware of medical abbreviations, indicating a notable gap in knowledge. Regarding the Drugs and Cosmetics Act, 76 participants were unfamiliar with Schedule H and H1, while 424 were knowledgeable. For Schedule X, 57 participants lacked knowledge, but 443 were informed exhibited a good understanding of these schedules. In drug safety for pregnancy, 101 were uninformed, whereas 399 had good knowledge which demonstrated a more comprehensive understanding of the categories of drugs deemed safe during pregnancy. Regarding LASA drugs, 279 participants lacked understanding, while 221 were proficient. This underscores that the majority of participants lack knowledge concerning Look-Alike Sound-Alike (LASA) drugs.

Assessment of Attitude and Practice community pharmacy practitioners

The study reveals key insights into pharmacy practices among 500 participants. Analgesics were the most frequently dispensed without prescriptions (91%), indicating a potential disregard for prescription regulations. While 94.8% adhered to using prescription letterheads, 5.2% did not, showing room for improved compliance. Only 46.3% checked patient histories, suggesting a need for better patient evaluation. Despite 90.4% recommending alternative brands, 60.2% provided patient counselling, indicating inconsistent practices. Although 97.8% followed proper procedures for IV fluids and injections, 36.85% monitored drug interactions, revealing significant gaps. A concerning 93.15% did not report ADRs, highlighting the need for better ADR reporting and training. Furthermore, 67.35% were not engaged in continuous education, and 74.4% did not offer health screenings, pointing to areas for improvement in professional development and service delivery.

Assessment of knowledge based on educational qualification and work experience
Participants with a pharmacy background had the highest average knowledge score of 18.6, significantly outperforming those with medical science (6.47), non-medical science (6.33), commerce (4.14), and arts backgrounds (4.07). HSC and SSC backgrounds scored the lowest (1.89 and 1.0, respectively). Additionally, individuals with over 10 years of experience scored highest (3.7), indicating that more experience correlates with better knowledge.

Assessment of Attitude and Practice based on educational qualification and work experience
The assessment shows that participants with a pharmacy background had the highest average attitude and practice scores (55.57), compared to those with medical science (27.66), non-medical science (27.65), commerce (41.28), and arts backgrounds (15.46). Participants with HSC and SSC backgrounds scored the lowest (8.86 and 7.8, respectively). Notably, those with over 10 years of experience had the highest scores (10.26), indicating that greater experience correlates with better attitude and practice.

Limitations:
• The study sample size was relatively small.
• This study was questionnaire-based, making it susceptible to bias.
• Acknowledge that the study period was limited in duration.

Future directions
• Enlarging the sample size could lead to more precise and reliable results.
• Examining how continuing education initiatives affect dispensers knowledge, attitudes, and practices might be helpful.
• Examine the factors influencing dispensers compliance with regulatory standards and ethical guidelines can provide insights into improving overall pharmaceutical care quality.
• Interprofessional collaboration between dispensers and other healthcare providers can shed light on how teamwork and communication impact pharmaceutical care delivery.

Conclusion
The study highlights significant gaps in the knowledge and practices of drug dispensers in community pharmacies, potentially impacting patient safety and care quality. Many dispensers lacked sufficient understanding of medication management, drug interactions, and proper dispensing techniques. To address these issues, continuous education and training programs are essential to improve knowledge, attitudes, and practices. Authorities should mandate the presence of qualified chief dispensing pharmacists, under whom pharmacy assistants can work. Additionally, an information leaflet was provided to support better practices.
It is crucial for drug dispensers to monitor prescriptions for errors, drug interactions, and adverse reactions, and to document and report any issues to the prescriber promptly.

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